RUTKOVSKIY, F.K.; GRIBKOVSKIY, V.P.

Density distribution of intense radiation in an absorbing specimen. Zhur. prikl. spekt. 3 no.1:32-37 Jl '65. (MIRA 18:9)

RUTKOVSKIY, F.K.; GUR'YANOVA, T.K.

Density distribution of pumping radiation in a trigonal rod.
Dokl. AN BSSR 9 no.6:364-366 Je '65. (MIRA 18:9)

1. Institut fiziki AN BSSR.

L 62252-65 EWA(k)/FBD/EWT(1)/EEC(k)-2/T/EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) SCTB/
IJP(c) WG
ACCESSION NR: AP5018843 UR/0368/65/003/001/0032/0037
535.89

AUTHOR: Rutkovskiy, F. K.; Gribkovskiy, V. P.

TITLE: Distribution of density of intense radiation in an absorbing sample

SOURCE: Zhurnal prikladnoy spektroskopii, v. 3, no. 1, 1965, 32-37

TOPIC TAGS: laser rod, laser, radiation intensity distribution, light energy density

ABSTRACT: The authors derive an integral equation for the density of light energy in a laser rod of arbitrary geometrical form with an absorption coefficient that depends on the intensity of the exciting light, and give numerical results for a cylindrical rod. The calculations are carried out for two extreme cases, when the exciting light outside the rod is completely diffuse, or when all the rays propagate perpendicular to the side surface. The bleaching of the substance under the action of the intense radiation, and the effect of multiple internal reflections of the light penetrating into the rod, are taken into account. The results are used to formulate a simple method for determining the parameters of the sample such as to ensure uniform excitation of the medium with minimum thermal stresses and minimum temperature gradients. "The authors thank S. T. Lysak for performing the computer calculations." Orig. art. has: 2 figures and 11 formulas. [02]

Card 1/2

L 62252-65

ACCESSION NR: AP5018843

ASSOCIATION: none

SUBMITTED: 18Dec64 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 006 OTHER: 003 ATD PRESS: 4076

Card 2/2

L 61818-65 EWP(e)/EWT(m)/EWP(i)/EWP(b) Pq-4 WH

ACCESSION NR: AP5017694 UR/0250/65/009/006/0364/0366

AUTHOR: Rutkovskiy, F. K.; Gur'yanova, T. K.

TITLE: Distribution of pump radiation density in a trihedral rod

SOURCE: AN BSSR. Doklady, v. 9, no. 6, 1965, 364-366

TOPIC TAGS: laser, neodymium laser, laser rod, laser oscillation, laser mode

ABSTRACT: Although laser rods can be of arbitrary shape, the pump-radiation distribution was hitherto investigated only in rectangular-prism and cylindrical rods. The present study is devoted to a trihedral prism, a shape proposed occasionally to eliminate harmful closed modes that reduce the generation power, especially since no total internal reflection is possible in such rods. The ray pattern in the prism is traced by constructing an infinite number of mirror images of the rod in its faces and summing the corresponding infinite series of integrals. The numerical computations were with the aid of an electronic computer. Plots are presented of the distribution of the relative pump radiation density in one-sixth of the normal cross section through a neodymium glass prism. The results show that in the absence of absorption the radiation density is evenly distributed, and in the presence of absorption it decreases towards the center of the rod. Maximum density is observed at the corner of the prism, owing to the decrease in the op-

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L 61818-65

ACCESSION NR: AP5017694

tical thickness at these locations. When ak = 0.5 (a = half width of face, k = = absorption coefficient), the rod absorbs half the energy incident on it. When ak = 3, the absorption is 87%. The fraction of the reflected energy is 9.7%. This report was presented by B. I. Stepanov. Orig. art. has: 2 figures and 1 formula. [02]

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics, AN BSSR)

SUBMITTED: 03Feb65 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 002 OTHER: 001 ATD PRESS: 4060

Card 2/2

RUTKOVSKIY, F.K.

Distribution of diffuse radiation density in a homogeneous isotropic absorbing medium. Zhur.prikl. spekt. 2 no.4:307-314 Ap '65.
(MIRA 18:8)

L 63959-65 EWT(1)/EWP(e)/EWT(m)/EWP(i) IJP(c) WH

ACCESSION NR: AP5020801 UR/0048/65/029/008/1369/1373

33
32
B

AUTHOR: Rutkovskiy, F.K.; Gribkovskiy, V.P.; Kravtsov, L.A.

21

TITLE: Density distribution of diffuse exciting light in a luminescing specimen /Report, Thirteenth Conference on Luminescence held at Khar'kov, 25 June to 1 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1369-1373

TOPIC TAGS: laser, light absorption, light diffusion, ruby, /ruby laser

10

ABSTRACT: The authors have calculated the intensity of the radiation at the distance r from the axis of an infinitely long circular cylinder of radius R, with refractive index n, and absorption coefficient k, located in a field of diffuse radiation, and have checked their results by experiments with plastic cylinders of different sizes containing different amounts of absorbent dye. The investigation was undertaken because of its technical interest in connection with laser design. Calculations were performed numerically for several values of n and kR both for cylinders with polished walls and with diffusing walls, and the results are presented graphically. For cylinders with polished walls the intensity is almost independent of r for a certain value of kR (depending on n); for smaller values of

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L 63959-65

ACCESSION NR: AP5020801

kR the intensity increases with decreasing r because of refraction at the side wall. For cylinders with diffusing walls the intensity always decreases with decreasing r. Calculations were also performed in which the variation of k and n with frequency was taken into account. Results are presented for a material with a single Lorentzian absorption line in a radiation field of which the intensity is independent of frequency, and for a ruby cylinder in 8000K black-body radiation. The experiments were performed on cylinders with radii from 0.75 to 1.25 cm and absorption coefficients from 0.02 to 3 cm^{-1}, using monochromatic light from a mercury arc. The means used for measuring the luminous intensity within the cylinders are not described. The experimental results agreed with the calculations for r/R less than 0.6. For larger values of r/R the measured intensities were up to 25% higher than the calculated. This is ascribed to total reflection from the wall of the cylinder. [15]
Orig. art. has: 8 formulas and 3 figures.

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Institute of Physics, Academy of Sciences, BSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: EC

NO REF SOV: 003 OTHER: 006 ATD PRESS: 4071

Card 2/2

L 63959-65 EWT(1)/EWP(e)/EWT(m)/EWP(i) IJP(c) WH

ACCESSION NR: AP5010801 UR/0048/65/029/008/1369/1373

AUTHOR: Rutkovskiy, F.K.; Gribkovskiy, V.P.; Kravtsov, L.A. 33 32 B 21

TITLE: Density distribution of diffuse exciting light in a luminescing specimen /Report, Thirteenth Conference on Luminescence held at Khar'kov, 25 June to 1 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1369-1373

TOPIC TAGS: laser, light absorption, light diffusion, ruby, ruby laser 10

ABSTRACT: The authors have calculated the intensity of the radiation at the distance r from the axis of an infinitely long circular cylinder of radius R, with refractive index n, and absorption coefficient k, located in a field of diffuse radiation, and have checked their results by experiments with plastic cylinders of different sizes containing different amounts of absorbent dye. The investigation was undertaken because of its technical interest in connection with laser design. Calculations were performed numerically for several values of n and kR both for cylinders with polished walls and with diffusing walls, and the results are presented graphically. For cylinders with polished walls the intensity is almost independent of r for a certain value of kR (depending on n); for smaller values of

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L 63959-65

ACCESSION NR: AP5020801

kR the intensity increases with decreasing r because of refraction at the side wall. For cylinders with diffusing walls the intensity always decreases with decreasing n. Calculations were also performed in which the variation of k and n with frequency was taken into account. Results are presented for a material with a single Lorentzian absorption line in a radiation field of which the intensity is independent of frequency, and for a ruby cylinder in 8000K black-body radiation. The experiments were performed on cylinders with radii from 0.75 to 1.25 cm and absorption coefficients from 0.02 to 3 cm^{-1}, using monochromatic light from a mercury arc. The means used for measuring the luminous intensity within the cylinders are not described. The experimental results agreed with the calculations for r/R less than 0.6. For larger values of r/R the measured intensities were up to 25% higher than the calculated. This is ascribed to total reflection from the wall of the cylinder. Orig. art. has: 8 formulas and 3 figures. [15]

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Institute of Physics, Academy of Sciences, BSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: EC

NO REF SOV: 003 OTHER: 006 ATD PRESS: 4071

Card 2/2

L 09976-67

ACC NR: AP6024337 SOURCE CODE: UR/0428/66/000/001/0131/0133

AUTHOR: Stepanov, B. I.; Gribkovskiy, V. P.; Rutkovskiy, F. K.

ORG: none

TITLE: The effect of the Q factor of a resonator on the power of the radiation generated

SOURCE: AN BSSR. Vestsi. Seryya fizika-matematychnykh navuk, no. 1, 1966, 131-133

TOPIC TAGS: resonator Q factor, resonator, generator, stimulated emission, excited particle

ABSTRACT: The dependence of the power generated by a resonator upon the reflection coefficient of the mirrors r is examined. The effect of r upon the pumping efficiency is taken into account. The radiation flux through an element of the end surface ds is determined by the expression

$$dS_{gen} = W_{gen} \frac{\ln\left(1/\sqrt{rr'}\right) ds}{\rho + l^{-1} \ln\left(1/\sqrt{rr'}\right)},$$

where W_{gen} is the power of the stimulated emission per unit volume of the working material; l the length of the rod; and r and r' the reflection coefficients of the ends; the denominator is equal to the loss factor. It is found that, when the rod is short, an increase in the reflection coefficient from 0 to 1 can lead to great change

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L 09976-67

ACC NR: AP6024337

in the absorption coefficient of the pumping radiation under generation conditions and, therefore, to a change in the pumping-radiation density in the specimen. The considerations are valid for three-level generators and those four-level generators in which there is appreciable depletion of ground-state particles. Orig. art. has: 3 formulas and 1 graph.

SUB CODE: 09/ SUBM DATE: 30Jul65/ ORIG REF: 004
20/

Card 2/2 blk

L 53748-65 EWT(1)/EWP(e)/EWT(m)/EWP(i)/T/EEC(b)-2/EWP(b) Pq-4/Pi-4 IJP(c)
ACCESSION NR: AP5013856 WH UR/0368/65/002/004/0307/0314

AUTHOR: Rutkovskiy, F. K.

TITLE: Distribution of density of diffuse radiation in a homogeneous isotropic absorbing sample

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 4, 1965, 307-314

TOPIC TAGS: radiation density, radiation distribution, diffuse radiation, optical absorption, neodymium glass/rod, density distribution, isotropic material

ABSTRACT: A general equation is derived for the calculation of the intensity of light in a sample of arbitrary shape, and the distribution of the light is investigated in a rod with a rectangular cross section. It is assumed in the calculation that the excitation is produced by fully diffuse, monochromatic, and incoherent radiation, and that the absorption coefficient is constant over the entire volume and is independent of the intensity of the light. This makes it possible to employ the laws of photometric optics. The expression, derived for a body of arbitrary shape, gives the relative spatial density of the light energy in the body with allowance for multiple internal reflections. The result is in series form and condi-

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L 53748-65
ACCESSION NR: AP5013856

tions under which the series can be approximated by a finite number of terms (corresponding to a finite number of reflections) are discussed. Calculations for an actual neodymium-glass rod with a side ratio of 45:8 were made with an electronic computer. The fraction of the light absorbed is given for different rod parameters. "The author thanks V. P. Gribkovskiy for a discussion of the manuscript and for useful advice." Orig. art. has: 3 figures and 28 formulas. [02]

ASSOCIATION: none

SUBMITTED: 04Aug64 ENCL: 00 SUB CODE: OP

NO. REF SOV: 003 OTHER: 002 ATD PRESS: 4019

Card 2/2

RUTKOVSKIY, F.K.

Use of a point diagram for computing the frequency contrast characteristics of an objective. Dokl. AN BSSR 5 no. 2:61-64 F '61. (MIRA 14:2)

1. Institut fiziki AN BSSR. Predstavleno akademikom AN BSSR B.I. Stepanovym.

(Lenses)

SELIN, N.I., master gazovogo khozyaystva; RUTKOVSKIY, G.G., gazovshchik

Improving the hot blasting valve in air preheaters. Metallurg 5 no.9:9-10 S '60. (MIRA 13:8)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat.
(Air preheaters) (Valves)

ABASHINA, V.I.; AKSEL'ROD, S.S.; RUTKOVSKIY, G.M.; SMIRNOVA, K.A.

The SF-8 recording spectrophotometer. Zhur. prikl. spekt. 3 no. 2:182-186 Ag '65. (MIRA 18:12)

RUTKOVSKIY, G.Ya.

Quality of pig iron produced in metallurgical enterprises in the Ukraine. Met. i gornorud. prom. no.4:6-8 Jl-Ag '64. (MIRA 18:7)

RUTKOVSKIY, G.Ya.

Potentials of blast furnace production in the Ukraine. Met. i gornorud. prom. no.1:6-7 Ja-F '65. (MIRA 18:3)

RUTKOVSKIY, G.Ya.

Increasing the blast furnace process in the Ukrainian S.S.R.
Met. i gornorud. prom. no.1:10-12 Ja-F '64. (MIRA 17:10)

DUBOVIK, V.N., st. prepodav.; MAMIN, A.U., kand. geol.-miner. nauk, dots.; OTTO, P.I.; RUMYANTSEVA, A.Ya., kand. geogr. nauk, ispolnyayushchiy obyazannosti dots.; SEREGIN, I.A., st. inzh.; MOSKALEV, A.F.; KOLESNIKOV, B.P., prof., doktor biol. nauk, rektor; OKOROKOV, V.I., kand. biol. nauk, dots.; KLIMENKO, R.A.; STARIKOVA, L.A., assistent; SHUMILOVA, V.Ya., assistent; MAKSIMOVA, Ye.A., dots.; KIRIN, F.Ya., kand. geogr. nauk, dots.; KUZNETSOVA, A.V., red.; MATVEYEV, S.M., red.; MOROZOV, V.K., red.; RUTKOVSKIY, I.M., red.; TYAZHEL'NIKOV, Ye.M., red.

[Nature of Chelyabinsk Province] Priroda Cheliabinskoi oblasti. Cheliabinsk, Yuzhno-Ural'skoe knizhnoe izd-vo, 1964. 241 p. (MIRA 18:7)

1. Kafedra geografii Chelyabinskogo pedagogicheskogo instituta (for Dubovik, Mamin, Rumyantseva, Kirin). 2. Nachal'nik geologicheskogo otdela Chelyabinskogo geologorazvedochnogo tresta (for Otto). 3. Chelyabinskaya gidrologicheskaya stantsiya (for Seregin). 4. Nachal'nik pochvennoy partii Chelyabinskoy zemleustroitel'noy ekspeditsii (for Moskalev). 5. Institut biologii Ural'skogo filiala AN SSSR (for Kolesnikov). 6. Kafedra zoologii Chelyabinskogo pedagogicheskogo instituta (for Okorokov, Starikova, Shumilova). 7. Chelyabinskiy rybnyy trest (for Klimenko).

RUTKOVSKIY, L.A. (Ordzhonikidze)

Influenza and acute catarrh of the upper respiratory tract as a cause of a temporary disability. Sov. zdrav. 19 no.11:40-44 '60. (MIRA 13:11)

1. Iz dorozhnoy bol'nitsy No.2 Severokavkazskoy zheleznoy dorogi.
(INFLUENZA) (CATARRH) (DISABILITY EVALUATION)

RUTKOVSKIY, L.A.

Correlation in the attendance volume of the population at ambulatory polyclinics and hospitals. Zdrav. Kaz. Feder. 5 no.11:41-43 N '61. (MIRA 14:10)

1. Iz dorozhnoy bol'nitsy No.2 Ordzhonikidze.
(MEDICAL CARE)

RUTKOVSKIY, L.A.

Patients' visits as units of statistical accounting. Zdrav. Ros. Feder. 6 no.1:24-25 Ja '62. (MIRA 15:3)

1. Iz dorozhnoy bol'nitsy No.2 stantsii Ordzhonikidze.
(MEDICAL STATISTICS)

RUTKOVSKIY, M.L., kandidat khimicheskikh nauk.

Corrosion of chemical apparatus by an aqueous solution of monoethanolamine. Khim. prom. no.3:153-156 Ap-My '56.
(MLRA 9:10)

1. Gosudarstvennyy institut azotnoy promyshlennosti.
(Corrosion and anticorrosives) (Chemical apparatus)
(Ethanol)

RUTKOVSKIY, M.L.; MESHCHERYAKOVA, I.D.

Search for the material of a reactor for the preparation of a polyorganosiloxane liquid. Zashch. met. 2 no.1:104-106 Ja-F '66. (MIRA 19:1)

1. Submitted April 8, 1965.

L 01286-67 EWT(m)/EWP(v)/EWP(j)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HM/WB/RM

ACC NR: AP6003328 SOURCE CODE: UR/0365/66/002/001/0104/0106

64
53
51

AUTHOR: Rutkovskiy, M. L.; Meshcheryakova, I. D.

ORG: none

TITLE: Search for material for a reactor used in the production of polyorganosiloxane liquid

SOURCE: Zashchita metallov, v. 2, no. 1, 1966, 104-106

TOPIC TAGS: corrosion resistance, monomer, siloxane, molybdenum containing alloy, titanium base alloy, corrosion resistant alloy, organosilicon compound, chemical laboratory apparatus, enamel

ABSTRACT: Polyorganosiloxane liquid [15] FM-1322/300 [15] is prepared now in an enameled reactor by the reaction at 95C of a mixture of organic silicon monomer with 25% solution of NaOH. A number of corrosion-resistant alloys was tested for behavior under reactor conditions because Soviet industry does not now produce apparatuses that are protected by acid-resistant enamel. Samples 40 x 15 x 2 mm large, after the required treatment, were suspended on teflon ribbons in the working reactor into gas and into liquid phases. The suspension was devised so that the samples neither touched each other nor the walls of the reactor. For the alloys investigated, the corrosion rates at 95C in the gas and liquid phases were determined (in mm/yr) to be as follows: [18]

Card 1/2 UDC: 620.193.4

L 01286-67

ACC NR: AP6003328

	Gas phase, mm/yr	Liquid phase, mm/yr
1Kh18N95	44	51.8
EI	4.25	5.28
BT-1	78	88
OT-4	58.8	89.5
Ti + 0.2% Pd	21	50.3
Ti + 30% Mo	0.11	0.35
EP-495 (Ni + 28% Mo)	1.05	0.54
EP-375 (Ni + 16% Mo)	4.5	not tested

The alloys Ti + 30% Mo and EP-495 were the most resistant to corrosion. However, the technology for producing Ti-Mo alloys is not yet developed and EP-495 can be used only if the production of the apparatuses does not require welding, because its welding seam has a tendency to intergranular corrosion. There is, however, the alloy EP-496, the welded seams of which have no tendency toward intergranular corrosion. Alloy EP-496 (Ni + 28% Mo + 2% V) was thus recommended as the material for the reactor. Orig. art. has: 3 tables and 1 fig.

SUB CODE: 11,13/07/SUBM DATE: 08Apr65/ ORIG REF: 003/ OTH REF: 001

Card 2/2 mjs

RUTKOVSKIY, M.L.

Chemical equipment corrosion with aqueous methanol-amine solutions [illegible] 1956

[illegible] H₂S [illegible] the apparent [illegible] showing [illegible] corrosion resistant. The difference in the lab and plant tests is caused by the motion of the liquid–steam emulsion and the 13–15° steam superheating. The addn. of 0.1% $K_2Cr_2O_7$ lowered the steel corrosion 40–60 times, but the dichromate is quickly used up by the H_2S. A periodic vacuum distn. of the amine is recommended to remove the corrosion-active components in the soln.

W. M. Sternberg

RUTKOVSKIY, M.L.; ANUFRIYEVA, N.A.; KOP'YEVA, O.M.; POTAPOVA, N.V.; KAZAKOV, I.V.

Kinetics of the gaseous boron saturation of nickel. Fiz. met. i metalloved. 12 no.2:217-222 Ag '61. (MIRA 14:9)
(Nickel--Hardening)
(Case hardening)

RUTKOVSKIY, M.L.; ANUFRIYEVA, N.A.; KOP'YEVA, O.M.; POTAPOVA, N.V.

Causes of the linear relation between the thickness of a layer and the length of time in the boron saturation of nickel. Fiz. met. i metalloved. 12 no.2:292-294 Ag '61. (MIRA 14:9)

(Nickel) (Case hardening)

18.1530 1116 2808 1087 26557

S/126/61/012/002/006/019
E111/E435

AUTHORS: Rutkovskiy, M.L., Anufriyeva, N.A., Kop'yeva, O.M. Potapova, N.V. and Kazakov, I.V.

TITLE: Kinetics of gas boriding of nickel

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.12, No.2, pp.217-222

TEXT: Materials such as borides, silicides and carbides satisfy the requirements of high chemical stability and resistance to erosion which technical developments are imposing. No substantial investigation on the rate of boriding has yet been reported and there is some divergence of views on results obtainable (e.g. Ref.10: Znigach A.F. and others, Metallovedeniye i termicheskaya obrabotka, 1959, No.4, 45; and Ref.11:Weintraub E. Ind. a. Eng. Chem., 1911, 3, 299). The authors have studied the gas boriding of nickel at 900°C using a 1:4-1:10 mixture of boron trichloride and hydrogen. The gas mixture was stored in a cylinder and admitted, at a measured rate, to a 30 mm diameter horizontal quartz reaction tube (in a furnace) which could also be flushed with nitrogen. The flow of the gas mixture was started when the temperature reached 500 to 600°C. Specimens were in the

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Kinetics of gas boriding ... 26557

S/126/61/012/002/006/019
E111/E435

form of rectangular 25 x 10 x 2 mm nickel plates, cleaned with emery and washed with alcohol. After thickness measurement with a micrometer the specimens were weighed. The thickness $\Delta\ell$ of metal consumed in the formation of the boride film was taken to be half the difference between the initial and final thicknesses (measured at the centre of the specimen). A linear relation between $\Delta\ell$ (mm) and boriding time (hours) (from attainment of the working temperature, 900°C) was found, $\Delta\ell$ being 0.8 at the maximum of 30 hours. Gas flows of 6, 24 and 96 litres/hour were used, the corresponding weight-gains in g/m^2 hour being 26.6, 54.1 and 99. All flow rates were in the laminar range. From the results the authors conclude that the rate-controlling factor was boron diffusion from the gas phase to the metal surface. In the range studied, the weight-gain rate (i.e. boriding rate) was found to be practically independent of the boron trichloride to hydrogen ratios. This suggests that the trichloride does not participate directly in boriding but forms an active intermediate compound. A check on the weight of nickel lost during boriding showed that it was under 2% indicating that nickel dichloride is not formed: this is

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contrary to the views of Powell. The boride film was found to consist of three layers (probably NiB outside, followed by Ni_3B_2 and Ni_2B) with different microhardness. The inner layer is thinnest. The boundaries between the layers are probably non-borided or weakly borided components, such as carbon, copper, sulphur or silicon. All the boundaries are serrated.
V.K.Kryukova and Z.A.Borisova and M.L.Mironenko participated in the experiments. There are 5 figures and 17 references: 12 Soviet and 5 non-Soviet. The two references to English language publications read as follows:
Lubbengayer A.W., Hurd D.T., Newkirk A.E., Hoard J.L., J. Am. Chem. Soc. 1943, Vol. 65, 1924.
Weintraub E. Ind. a. Eng. Chem., 1911, 3, 299.

SUBMITTED: October 14, 1960 (initially)
January 13, 1961 (after revision)

Card 3/3

26565 S/126/61/012/002/016/019
E073/E335

1.1800

AUTHORS: Rutkovskiy, M.L., Anufriyeva, N.A., Kop'yeva, O.M. and Potapova, N.V.

TITLE: On the Causes of a Linear Relation Between the Thickness of the Layer and Duration of the Process of Borating Nickel

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 12, No. 2, pp. 292 - 294

TEXT: In an earlier paper (Ref. 1 - FMM, 1961, 12, 217) the authors and I.V. Kazakov have shown that in borating nickel a linear dependence was observed between the thickness of the metal layers Δl expended on forming the boron film and the time of boron deposition τ for $\Delta l \leq 0.8$ mm. Usually, the curve reflecting the speed of the diffusion process is a parabola, for which the equation $y^2 = f \cdot \tau$ is valid; linear dependence between the thickness of the layer and the time is possible only if the forming film has mechanical defects along which the diffusing substance migrates to the surface of the

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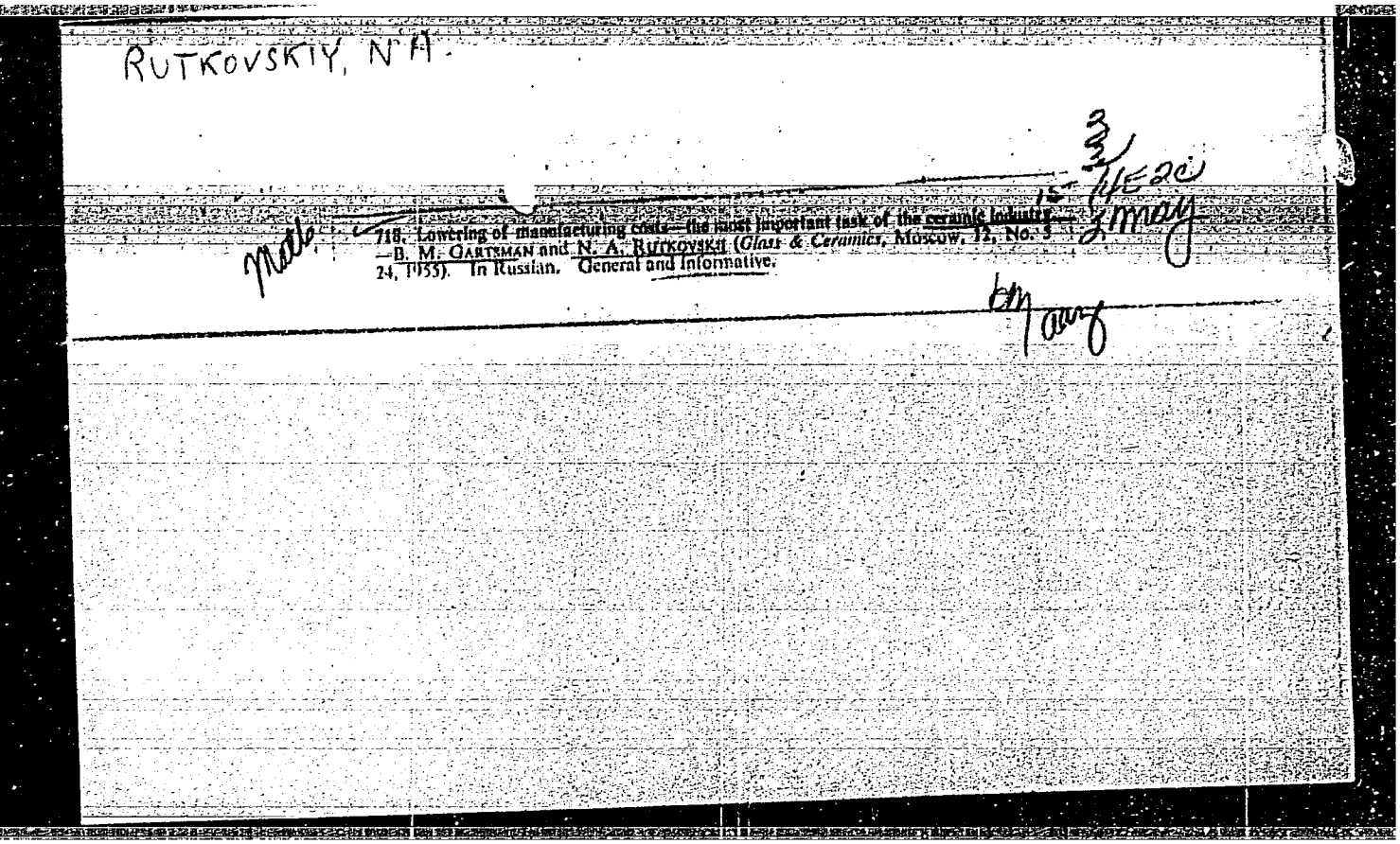
base material. A photograph of a polished microsection of a boride layer is reproduced, from which it is concluded that the linear dependence is not due to mechanical defects of the film since defects at a direction normal to the surface of the specimen were not detected in the film. Comparison of the structure of boride films on nickel and cobalt has shown that they are qualitatively equal in spite of the fact that the increase in thickness of the boride film obeys the parabolic law in the case of cobalt and the linear law in the case of nickel; Figs. 3 and 4 show the dependence of the thickness of the borated layer $\Delta \ell$, mm as a function of time, hrs, for a borating temperature of 900 °C for nickel and cobalt, respectively. It was established that the temperature coefficient of the speed of borating nickel at temperatures above 900 °C was considerably higher than was anticipated on the basis of the exponential time dependence of the diffusion coefficient. If borating was at 1 000 °C the eutectic NiB + Ni_3B_2 with a fusion temperature of 990 °C formed and the specimens

melted off. Formation of this eutectic led to the idea that in the case of the formation of borides being exothermal the linear dependence between the thickness of the borated layer and the time at temperatures not differing greatly from the temperature of formation of the eutectic can be explained as follows. At the surface of the nickel specimens which is subjected to borating there will be concentrational fluctuations; due to the exothermal nature of the process this will lead to a local increase in the temperature in the borated specimen and to the formation of a low melting-point eutectic at these points. The diffusion coefficient at these points will increase instantaneously and this will lead to an overall increase in the diffusion coefficient and will result in a linear dependence between the thickness of the layer and the borating time. Conservation of the parabolic dependence in the case of cobalt is obviously due to the fact that the temperature of formation of the low melting-point eutectic Co-B, which is 1 105 °C, exceeds the borating temperature by 205 °C, whilst in the case of nickel this temperature difference is only

On the Causes of ....

90 °C. Thus, the heat released during borating of cobalt is apparently inadequate for producing a low melting-point eutectic at the spots where concentration fluctuations occur and, as a result of this, the parabolic dependence $\Delta l = f(\tau)$ is maintained in the case of borating cobalt under the given temperature conditions. There are 4 figures and 4 references: 3 Soviet and 1 non-Soviet. The English-language reference quoted is: Ref. 3 - Brewer, Dwight L. Sawyer et al - J. Amer. Ceramic Soc., 1951, 34, 173.

SUBMITTED: February 28, 1961



RUTKOVSKIY, N.A.

718. Lowering of manufacturing costs—the most important task of the ceramic industry—B. M. GARTSMAN and N. A. RUTKOVSKII (*Glass & Ceramics*, Moscow, 12, No. 5, 24, (1955). In Russian. General and informative.

LATYSHEV, L.A., kand.tekhn.nauk; ROTOVSKIY, N.B., kand.tekhn.nauk; TIKHONOV, V.B., kand.tekhn.nauk

Experimental investigation of the effect of vibrations of pipes on the parameters of the flowing fluid in these pipes. Trudy MAI no.119:111-123 '60. (MIRA 13:11)
(Pipe--Hydrodynamics)

OKHAPKIN, F.P. (g.Kirov); YAKOVLEV, N.M. (g. Ul'yanovsk); GROBSHTEYN, N.Kh. (Smolensk) RUTKOVSKIY, O.O.

Discussion of new geography programs. Geog.v shkole 22 no.6: 61-71 N-D '59. (MIRA 13:4)

1. 4-y shkola Alma-Aty. (for Rutkovskiy)
(Geography--Study and teaching)

RUTKOVSKIY, O.O.

ORAZMETOV, Z.; GORELKIN, L.M.; POTYAYEV, M.Ye.; ZARUDI, Ye.O., metodist; MITENEV, V.S.; VASIL'YEV, A.V.; GORSHENKOV, N.G.; RUTKOVSKIY, O.O.; KUSYAPKULOVA, T.Sh.

Letters to the editors. Geog. v shkole 22 no.2:72-76 Mr-Ap '59. (MIRA 12:6)

1. 1-ya shkola pos. Andreyevka Turkmenskoy SSR (for Orazmetov). 2. Shkola pri shakhte No.11 Karachayevskogo rayona Stavropol'skogo kraya (for Gorelkin). 3. Andreyevskaya semiletnyaya shkola Penzenskoy oblasti (for Potyayev). 4. Bashkirskiy institut usovershenstvovaniya uchiteley (for Zarudi). 5. Rayonnyy pedagogicheskiy kabinet s.Kich-Gorodok Vologodskoy oblasti (for Mitenev). 6. Alekseyevskaya shkola Stalingradskoy oblasti (for Vasil'yev). 7. Yakhromskaya shkola No.2 Moskovskoy oblasti (for Gorshenkov). 8. 4-ya shkola g.Alma-Ata (for Rutkovskiy). 9. 64-ya shkola g.Alma-Ata (for Kusyapkulova).

(Geography--Study and teaching)

14-57-6-11657

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 6, p 7 (USSR)

AUTHOR: Rutkovskiy, O. O.

TITLE: The Seventh Class in the Geography of the USSR Studies Kazakhstan, Using Regional Material (Izucheniye temy "Kazakhstan" s ispol'zovaniyem krayevedcheskogo materiala v kurse geografii SSSR v 7-m klasse)

PERIODICAL: V sb: Iz opyta raboty prepodavateley geogr. Alma-Ata, Kazakhsk. Uchpedgiz, 1955, pp 36-73

ABSTRACT: Bibliographic entry

Card 1/1

RUTKOVSKAYA, V.A.

Changes in the amount of water discharged by rivers into the Caspian Sea due to the economic activities of man. Trudy Okean. kom. 5:160-185 '59. (MIRA 13:6)
(Caspian Sea--Hydrology)

RUTKOVSKIY, G.Ya., inzh.; SIDOROV, N.Ye., kand.tekhn.nauk

Production of cast iron in the Ukraine. Met. i gornorud. prom. no.4:7-9 Jl-Ag '62. (MIRA 15:9)

1. Gosplan UkrSSR.
(Ukraine—Iron and steel plants—Statistics)
(Cast iron—Statistics)

RUTKOVSKIY, R.

Conversion of the Ts-20 volt-ammeter. Radio no.9:47 S '62. (MIRA 15:9)

(Transistors--Measurement) (Electric meters)

L 14638-66 ETC(f)/EPF(n)-2/EWG(m)/EWP(t)/EWP(b) IJP(c) JD/WW
ACC NR: AP6008150 SOURCE CODE: PO/0046/65/010/008/0503/0512

AUTHOR: Rutkowski, Wladyslaw--Rutkovski, V.; Szteke, Witold--Shteke, V.; Wieczorkowski, Mariusz--Vechorkovski, M. 40 B

ORG: Department of Atomic Fuels and Construction Materials, Institute of Nuclear Research, Swierk (Zaklad Paliw Jadrowych i Materialow Konstrukcyinych, Institut Badan Jadrowych)

TITLE: Dispersion-type fuel element for EWA reactor 19

SOURCE: Nukleonika, v. 10, no. 8, 1965, 503-512

TOPIC TAGS: reactor fuel element, uranium compound, magnesium, nuclear reactor

ABSTRACT: In connection with investigations on dispersion-type fuels for experimental and university reactors, the technology of EK-10 elements with UO_2-Mg dispersion cores was studied. Investigation and production data for these fuel rods are presented. Orig. art. has:7 figures. [NA]

SUB CODE: 18 / SUBM DATE: 31May65 / ORIG REF: 006 / OTH REF: 005

Card 1/1

RUTKOVSKIY, V., inzh.; RAZUVANOV, A., inzh.; LUDCHENKO, A.; KAMENSHCHIKOV, V., inzh.; GERMAS, M., inzh.; GETSOV, G.; GAYETSKIY, A., inzh.; GEL'FER, S., inzh.; ZHURAKHOVSKIY, P., inzh.; BRUZH, R.; SEMENOV, A., inzh.

Exchange of experience. Avt. transp. 42 no. 5:51-54 My '64. (MIRA 17:5)

1. Glavnyy inzh. Tarashchanskogo avtoparka (for Ludchenko).
2. Kaluzhskiy avtoremontnyy zavod (for Semenov).

RUTKOVSKIY, V.

Development of powder metallurgy in the Polish People's Republic. Porosh.met. 2 no.1:93-96 Ja-F '62. (MIRA 15:8)

1. Gornaya i metallurgicheskaya akademiya, Krakov.
(Poland--Powder metallurgy)

L 18165-63 EWP(q)/EWT(m)/BDS AFFTC JD

ACCESSION NR: AP3004581 S/0130/63/000/008/0019/0022

54
53

AUTHORS: Chuyko, N. M.; Rutkovskiy, V. B.

TITLE: Vacuum treatment of steel in the ladle by inert gas purification 14

SOURCE: Metallurg, no. 8, 1963, 19-22

TOPIC TAGS: vacuum treatment, inert gas purification, argon, degassing

ABSTRACT: In order to insure proper purification of steel, the Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute) in cooperation with the plant Dneprospetsstal' constructed an installation permitting the passage of inert gases through the metal in the ladle under vacuum. The installation consisted of a 28 m^3 vacuum chamber provided with a heavy steel blast connection to a perforated chamotte extension pipe. The pipe is inserted into the ladle within the chamber and conducts an inert gas which is bubbled through the smelt. A total of 33 commercial batches were processed four ways: 1) passing of argon at atmospheric pressure; 2) passing of argon through the reduced steel under vacuum; 3) the vacuum treatment of nonreduced steel subsequently reduced with ferrosilica; 4) passing of argon through nonreduced steel under vacuum. The best

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L 18165-63
ACCESSION NR: AP3004581

results were obtained by the last method. The smelts treated by the first and second methods had a higher percentage of globular inclusions, those treated by the third and fourth ways were free of these. It is anticipated that a further reduction of the residual pressure in the chamber to 5 mm of mercury column from the present 18-35 mm would considerably enhance the degree of purification of the smelt. Orig. art. has: 1 diagram.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: 00 DATE ACQ: 27Aug63 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

Card 2/2

CHUYKO, N.M.; GALITSKIY, Yu.P.; RUTKOVSKIY, V.B.; SAMOYLENKO, E.D.; SENCHILOV, E.S.

Gases in acid electric steel. Nauch. trudy DMI no.51:64-76 '63. (MIRA 17:10)

1. Dnepropetrovskiy metallurgicheskiy institut i Dneprodzerzhinskiy vagonostroitel'nyy zavod imeni gazety "Pravda".

RUTKOVSKIY, V.B.

Role of calcium fluoride in the deoxidation and desulfuration of electric steel. Nauch. trudy DMI no.51:30-40 '63.
(MIRA 17:10)

S/133/62/000/009/003/009
A054/A127

AUTHORS: Chuyko, N.M., Doctor of Technical Sciences, Rutkovskiy, V.B., Danichek, R.Ye., Perevyazko, A.T., Borodulin, G.M., Tregubenko, A.F., Shamil', Yu.P., Frantsov, V.P., Volovich, V.G., - Engineers

TITLE: Blowing inert gases through the metal in the ladle under vacuum

PERIODICAL: Stal', no. 9, 1962, 809 - 811

TEXT: Vacuum treatment of liquid steel promotes the removal of gases and reduces the amount of nonmetallic inclusions. Tests were carried out (in cooperation with I.M. Ioffe, M.I. Lavrent'yev, G.P. Parkhomenko, V.I. Demidenko, Ye.M. Rysin, and T.M. Vorob'yeva, Engineers) to determine the optimum methods of blowing inert gases through the liquid metal in the ladle in combination with the vacuum treatment. The method established does not require special refractory materials, the apparatus used (designed by N.M. Chuyko, Professor and Ye.I. Lavreyev, Engineer) is of a simple design and metal losses through the spout can be prevented. The argon feed can be controlled very closely by means of 3 rotameters [PC-7 (RS-7) type], having 30 standard m^3/h capacity and supplied with

Card 1/3

Blowing inert gases through the metal in ....

needle valves. The test steel [ШХ15 (ShKh15)] was smelted in four versions: I. blowing through the reduced metal in the ladle under atmospheric pressure; II. the same, under vacuum; III. vacuum treatment of non-reduced metal, containing less than 0.05% Si, in the ladle and reduction with ferrosilicon and aluminum at the end of the process; IV. blowing through non-reduced metal in the ladle under vacuum, with addition of ferrosilicon and aluminum at the end of blowing. Ferrosilicon was added in an amount to ensure 0.27 - 0.28% Si content in the metal, the amount of aluminum added was 0.5 kg/ton. The technically pure argon gas contained 0.003 - 0.009% oxygen and maximum 0.01% nitrogen. The hydrogen content of the metal (both in reduced and non-reduced condiction) could most efficiently be removed when argon gas was blown through at residual pressures of 10 - 12 mm mercury column in the vacuum chamber, with a blowing time of at least 8 min. A maximum reduction of the oxygen content can be obtained by blowing gas into the ladle through non-reduced metal under vacuum (IV). With regard to nonmetallic inclusions the best results are attained by versions III and IV. Some of the heats were entirely without spheroidal inclusions. The amount of oxygen and of impurities also depends on the degree of reduction of the slag, in view of the intensive mixing of metal and slag during blowing. The

Blowing inert gases through the metal in ....

lowest oxygen content (0.0019%) and the smallest number of oxide and spheroidal inclusions are ensured when argon is blown in amounts of 0.05 - 0.06 m^3/ton, under vacuum, at remanent pressures of 18 - 30 mm Hg. The intense stirring of the metal caused by the argon gas blown into the ladle also causes a uniform distribution of silicon in the bottom part of the ladle and its complete adsorption. There are 3 figures. The English-language reference is: Iron and Steel Engineer, 1959, v. 36, no. 9 (September), 192.

Card 3/3

S/148/60/000/008/002/018
A161/A029

AUTHORS: Chuyko, N.M.; Rutkovskiy, V.B.; Konishchev, M.P.; Perevyazko, A.G.; Tregubenko, A.F.; Yatskevich, I.S.; Zabaluyev, I.P.; Kurganov, V.V.; Bobkov, T.M.; Antipenko, G.I.

TITLE: A New Smelting Technology Under White Slag for Ball Bearing Steel of Grade ШХ15 (ShKh15)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. - Chernaya metallurgiya, 1960, No. 8, pp. 38 - 47

TEXT: At the "Dneprospetsstal'" Works up to 1956 ShKh15 steel was teemed simultaneously with slag and no attention was paid to steel treatment by slag in the ladle during the teeming. The final S content of 0.02% was obligatory and the refining took between 2 h 10 min and 2 h 40 min or more. The refining time had been cut down to 1 h 50 min - 2 h 10 min by addition of ferrochrome into non-reduced metal with a content of 0.025% S. To boost the heat process and to improve the metal quality, N.M. Chuyko suggested to cut the refining time to 1 h 10 min or less by deoxidation and desulfuration of the metal with electric furnace slag in the ladle during teeming. The article contains details of this new

Card 1/3

A New Smelting Technology Under White Slag for Ball Bearing Steel of Grade IIIX15 (ShKh15)

technique. The effect of the oxidizing and reducing heat period factors was determined. The formation of highly-basic and well deoxidized slag was mainly studied. The slag quantity used was 4 - 5% of the metal weight with a CaO content of over 55%, FeO below 0.4% and CaF_2 below 2.0%. First a considerable quantity of slag was spilled through a widely open hole into the ladle, and then metal poured from 3 - 4 m height in a solid jet, which brought about a large contact area with slag and rapid deoxidation and desulfuration. The optimum parameters of the oxidation period were stated to be: $\Delta[C] = 0.3 - 0.5\%$ at a carbon burning rate of 0.4 - 0.5%/h, and a metal temperature of 1,545 - 1,565°C before skimming the oxidizing slag. The reducing period under lime-chamotte white slag with low calcium fluoride content proved to be expedient, as well as the treatment of the metal in the ladle by this slag. The optimum slag composition is: $(FeO) < 0.5\%$; $(CaF_2) = 1 - 2\%$; $\Sigma(SiO_2 + Al_2O_3) = 31 - 34\%$; $(CaO) > 53\%$; $(MgO) \leq 12\%$, and $\Sigma(CaO + MgO) = 63 - 65\%$. The optimum metal temperature before teeming is 1,550 - 1,570°C; it ensures the filling of a 2.8-ton ingot during 165 - 190 sec. Final deoxidation of steel by aluminum in the ladle gives a high reduction of oxygen content (over 30%). The quantity of nonmetallic inclusions in

S/148/60/000/008/002/018
A161/A029

A New Smelting Technology Under White Slag for Ball Bearing Steel of Grade 15 (ShKh15)

steel was slightly lower than usual in steel smelted in the usual process under carbide slag with long refining. There are 7 figures, 5 tables and 7 Soviet references.

ASSOCIATIONS: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute); zavod "Dneprospetsstal'" ("Dneprospetsstal'" Works)

SUBMITTED: November 12, 1959

Card 3/3

CHUYKO, N.M., doktor tekhn.nauk; PEREVYAZKO, A.T.; MOSHKEVICH, Ye.I.; Prinimali uchastiye: RUTKOVSKIY, V.B.; KONISHCHEV, M.I.; FRANTSEV, V.P.; DEMIDOV, P.V.

Controlling the gaseous phase composition in an electric furnace by means of an air curtain. Met. i gornorud. prom. no.2:15-18 Mr-Ap '62. (MIRA 15:11)

1. Dnepropetrovskiy metallurgicheskiy institut (for Chuyko).
2. Dnepropetrovskiy staleplavil'nyy zavod vysokokachestvennykh i spetsial'nykh staley (for Perevyazko, Moshkevich).
(Electric furnaces) (Gases--Analysis)

CHUYKO, N.M., doktor tekhn.nauk; RUTKOVSKIY, V.B., inzh.; DANICHEK, R.Ye., inzh.; PEREVYAZKO, A.T., inzh.; BORODULIN, G.M., inzh.; TREGUBENKO, A.F., inzh.; SHAMIL', Yu.P., inzh.; FRANTSOV, V.P., inzh.; VOLOVICH, V.G., inzh.; Prinimali uchastiye: IOFFE, I.M., inzh.; LAVRENT'YEV, M.I., inzh.; PARKHOMENKO, G.P., inzh.; DEMIDENKO, V.I., inzh.; RYSIN, Ye.M., inzh.; VOROB'YEVA, T.M., inzh.

Inert gas blowing of metal in the ladle in vacuum. Stal' 22 no.9:809-811 S '62. (MIRA 15:11)
(Vacuum metallurgy) (Protective atmospheres)

DEVYATOV, M.V., (shkola Kazani); NIKITIN, I.V.; GORSHENKOV, N.G.; RUTKOVSKIY, O.O. (Alma-Ata); DAVYDOV, A.V.; LEBEDEVA, G.P.

Letters to the editor. Geog. v shkole 21 no.5:72-75 S-O '58. (MIRA 11:10)

1. Shkola No.5 g.Solnechnogorska (for Nikitin). 2. Yakhromskaya shkola Moskovskoy oblasti (for Gorshenkov). 3. Vikulovskaya shkola Tyumenskoy oblasti (for Davydov). 4. Ul'yanovskaya shkola Kaluzhskoy oblasti (for Lebedeva).
(Geography--Study and teaching)

66502
SOV/137-59-7-14586

18.3200

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 7, p 54 (USSR)

AUTHORS: Chuyko, N., Kadinov, Ye., Rutkovskiy V., Zabaluyev, I., Bobkov, T., Kurganov, V., Antipenko, G.

TITLE: New Technology in Electric Smelting of Ball Bearing Steel

PERIODICAL: Tekhn.-ekon. byul. Sovnarkhoz Zaporozhsk. ekon. adm. r-na, 1958, Nr 1, pp 6-10

ABSTRACT: A new method of ball-bearing steel smelting in high-capacity (50 t) arc furnaces was developed at the "Dneprospetsstal'" Plant. The amount of burnt-out C during the oxidation stage must be $\leq$0.25%; the temperature of the metal prior to slag skimming must be about the same as the temperature of teeming (1,550°-1,570°C) as measured by the plunged thermocouple. Reduction takes place under white slag. Preliminary deoxidation of the slag is performed by carbonization of the metal by 0.03-0.05% C with the use of dry ground coke. Fe-Cr and Fe-Si are added until the slag is being formed. The slag is formed through lime, refractory clay and fluorspar in a 6:2:1 proportion and amounting to 3-4% of the metal weight. Deoxidation is carried out by 3-4 blends of ground coke, 75% Fe-Si powder, and lime. 0.5 kg/t aluminum powder is added to the

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New Technology in Electric Smelting of Ball Bearing Steel SOV/137-59-7-14586

final mixture 10 minutes prior to teeming. The slag, before removing, contains CaO $\geq$55.0%; $CaC_2 \leq 0.5\%$ and FeO $\leq$0.4%. The metal temperature is 1,545-1,565°C. 0.5 kg/t is added by using a bar fixed at the ladle rim. In teeming process, first, most of the slag and then the metal with the slag are removed. Refining extends over 1 hour 30 minutes. Contamination of the steel by non-metallic impurities does not increase: the average mark for oxides (October 1957) is 2.15 by conventional technology and 2.12 by the new method; it is respectively 2.17 and 2.15 for sulfides. Globular impurities usually do not occur in the new technology. Duration of the smelting time is reduced by 10%; electric power consumption is reduced by 50-70 kw-hrs/ton.

V.B.

Card 2/2

S/137/61/000/008/011/037
A060/A101

AUTHORS: Chuyko, N. M., Rutkovskiy, V. B., Perevyazko, A. T., Antipenko, G.I., Babkov, T. M., Kurganov, V. V., Frantsev, V. P.

TITLE: Technique for smelting electric steel involving the treatment of the metal by slags in the ladle

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 8, 1961, 36, abstract 8V225 ("Metallurg. i gornorudn. prom-st'. Nauchno-tekhn. sb.", 1960, no. 4, 31-34)

TEXT: A new technique for smelting structural and ball-bearing steels was worked out by the plant "Dneprospetsstal'" and by the Dnepropetrovsk Metallurgical Insitute. The technique provides for the preliminary reduction of the metal by Fe-Mn and Fe-Si or by Si-Mn and the subsequent aftercharging with Fe-Cr. The slag is reduced by ground 75% Fe-Si and coke, the final reduction is carried out by Al bars in the ladle, and the metal is slag-treated on drawing off. The use of the technique in the smelting of various grades of structural and ball-bearing steels in large (55 ton) electric furnaces makes it possible to raise somewhat

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S/137/61/000/008/011/037
A060/A101

Technique for smelting electric steel ...

the metal quality, to reduce the smelting duration by 20 - 40 min, and reduce the electric power expenditure by 40 - 50 kwhr/ton.

V. Shumskiy

[Abstracter's note: Complete translation]

Card 2/2

CHUYKO, N.M.; Prinimal uchastiye RUTKOVSKIY, V.B., aspirant

Theory of the acid electric steel smelting process. Izv. vys. ucheb. zav.; chern. met. 4 no.11:76-85 '61. (MIRA 14:12)

1. Dnepropetrovskiy metallurgicheskiy institut.
(Steel--Electrometallurgy)

CHUYKO, N.M.; RUTKOVSKIY, V.B.

Vacuum treatment of steel in the ladle with blowing by inert gases. Metallurg 8 no.8:19-22 Ag '63. (MIRA 16:10)

1. Dnepropetrovskiy metallurgicheskiy institut.

CHUYKO, N.M.; RUTKOVSKIY, V.B.; KONISHCHEV, M.P.; PEREVYAZKO, A.G.; TREGUBENKO, A.F.; YATSKEVICH, I.S.; ZABALUYEV, I.P.; KURGANOV, V.V.; BOBKOV, T.M.; ANTIPENKO, G.I.

New process of making ShKh-15 all-bearing steel under white slags. Izv. vys. ucheb. zav.; chern. met. no.8:38-47 '60. (MIRA 13: 9)

1. Dnepropetrovskiy metallurgicheskiy institut i zavod "Dneprospetsstal'".
(Bearing metals) (Steel--Metallurgy)

RUTKOVSKIĬ, V.

Research on the economy of water resources of forests and meteorology in forestry should be developed more extensively. Tr. from the Russian. p.51. METEOROLOGICKE ZPRAVY. (Statni meteorologicky ustav) Prague. Vol. 7, no. 2, April 1954

SOURCE: East European Accessions List. (EEAL) Library of Congress Vol. 5, no. 8, August 1956

V.I Rutkovskiy

K.

USSR/Forestry - General Problems.

Abs Jour : Ref Zhur - Biol., No 4, 1958, 15338

Author : V.I. Rutkovskiy

Inst :

Title : The Effect of Forests on the Accumulation and Thawing of Snow.
(Vliyaniye lesov na nakopleniye i tayaniye snega).

Orig Pub : V sb.: Sneg i talyye vody. Ikh izucheniye i ispol'zovaniye M., AN SSSR, 1956, 184-205

Abstract : Research on the relation between the rate of the snow blanket and the character of forests have been made for three winters in the belt from Minsk to Ufa; in the mediditional direction the belt from Leningrad to Sumskaya Oblast' was studied. It was established that spruce most strongly affected snow accumulation; under their spread the supply of snow was always less than on neighboring clearings; however, their action varies

Card 1/2

USSR / Forestry. Forest Crops. K-3

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24908.

Author : Rutkovskiy, V. I.
Inst : Not given.
Title : Methods of Supplementary Moistening of the Soil to Increase the Stability of Forest Plantings.

Orig Pub: Sb. rabot po lesn. kh-vu. Vses. n.-i. in-t lesovodstva i mekhaniz. lesn. kh-va, 1956, vyp. 32, 5-18.

Abstract: By experiments in the Stepnoy LOS (Stavropol'skiy Kray), the advisability of creation of snow gathering trenches between rows of forest plantings was established. Strong winds and thaws, observed in the Stepnoy region, promote repeated filling with snow during the winter, which considerably raises the effectiveness of that method. Technical recommendations are given.

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USSR/Forestry - Forest Crops. K.

Abs JOur : Ref Zhur - Biol., No 15, 1958, 68043

snow from washing away out of the mountain pastures, and by accumulating snow in river water-reservoirs. It is recommended that snow-accumulating forest belts, which will also store up surface flow, be planted in basins where the water balance is most delicate. On uncovered shale slopes forest crops increase the water penetrability of the upper horizons to a significant degree, reducing surface flow and weakening its erosive effects. Afforestation of limestone slopes permits absorption of surface water and increases subsurface water reserves. Recommendations are given on the technical aspects of forest crops.
-- V.V. Protopopov

Card 2/2

USSR / Forestry. General Problems. K

Abs Jour: Ref Zhur-Biol., No 7, 1958, 29512.

Abstract: temperatures in February and high ones during the snow thawing period contributed to the intensity of the snow thaw. The variation in wooded density from 0 to 50% had no effect on the date when the maximum run-off occurred. When the forest covered the area densely the maximum run-off took place with a delay (as compared to the ordinary time) of 8-10 days. The maximum run-off from open spaces leads the beginning of run-off on afforested water-collecting areas. A change in forest density of from 0 to 95% caused a lag in the beginning of surface run-off on open areas amounting to 5 days. It was found that the spring run-off period is divided into three phases, sharply differentiated from each other by the volume of run-off at each degree of

10-58-3-17/29

AUTHOR: Rutkovskiy, V.I.

TITLE: About the Influence of Forestry Measures on Flow of Rivers (Vliyaniye lesokhozyaystvennykh meropriyatiy na stok rek)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geograficheskaya, 1958, Nr 3, pp 114-126 (USSR)

ABSTRACT: The author criticizes the views of various Soviet scientists who have tried to solve the problem of interrelation between forests and stream flow and have come to quite different and even opposite results. The reason for this is that the solution of forest hydrological problems has been tried by separate experts, but not by collective teams. This leads to serious methodological mistakes, since the individual expert is forced to deal with scientific matters not familiar to him. The author presents and reviews the hypotheses expressed by M.I. L'vovich (1955), A.P. Bochkov (1954), G.N. Vysotskiy (1937), A.D. Dubakh (1935), P.S. Kuzin (1947), V.V. Rakhmanov (1953), D.L. Sokolovskiy(1952), I.M. Labunskiy (1948), G.F. Basov (1948), L.S. Berg (1934), Rutkovskiy(1931), M.A. Tsvetkov (1950), Konstantinov(1952). The uncertainty of problems regarding the influence of forests on amount of stream flow and its distri-

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bution throughout the year, may be explained by the erroneous suppositions of various scientists regarding the reduction of forests and their deteriorating state, and because they did not consider the different geological structures while comparing different river basins. A.D. Dubakh, D.L. Sokolovskiy, V.V. Rakhmanov, and A.P. Bochkov did not take climatic conditions into account during their investigations. The increase or decrease of stream flow depends also on the kind of forests felled. Combined forest hydroclimatic research should help to determine the influence of forestry measures on the amount of yearly flow. The water-regulating role of forests is everywhere different and depends on the regulation of flow due to other physical geographic factors, and therefore different forestry measures must be applied in different forest hydroclimatic districts. There are 33 Soviet references.

AVAILABLE: Library of Congress

Card 2/2

1. Forestry - USSR 2. Hydrology - USSR
3. Rivers - USSR

RAZUVANOV, A.; RUTKOVSKIY, V.

Continuous line for repairing connecting rods. Avt. transp. 42 no.7:34-36 Jl '64. (MIRA 17:11)

SOKOL, I.B.; PEPELIN, B.A.; RUTKOVSKIY, V.I.

New developments in the baking of molds for precision casting.
Lit. proizv. no. 8:4-6 Ag '60. (MIRA 14:2)
(Precision casting) (Molding (Founding))

RUTKOVSKIY, V.I.; KURDINA, T.N.

Water balance of Rybinsk Reservoir during the period 1947-1955.
Trudy Inst. biol. vodokhran. no.1:5-24 '59. (MIRA 13:2)
(Rybinsk Reservoir--Hydrology)

RUTKOVSKIY, V.I.

Hydrological investigation of reservoirs from a biological standpoint. Trudy Okean. kom. 5:270-278 '59. (MIRA 13:6)
(RESERVOIRS) (FRESH-WATER BIOLOGY)

RUTKOVSKIY, V.I.

Tempreature balance of Rybinsk Reservoir. Trudy Inst. biol. vodokhran. no.5:132-238'63. (MIRA 16:8)
(RYBINSK RESERVOIR—TEMPERATURE)

RUTKOVSKIY, V.I.

Establishing the interrelationships of river waters and ground waters in analyzing river hydrographs. Sbor. rab. po gidrol. no.1:80-86 '59. (MIRA 15:2)

1. Vsesoyuznyy institut lesovodstva i mekhanizatsii lesnogo khozyaystva.
(Runoff)

LAVRUKHINA, [illegible]; BOIKOVSKIY, V.M.; IBRAYEV, [illegible]; YUKINA, L.V.

[illegible] the variation in [illegible] rays based on their effects on stony meteorites. Izv. AN SSSR. Ser. fiz. [illegible] no.[illegible] 1843-1845 [illegible] '65. (MIRA 18:10)

1. Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo AN SSSR.

L 33261-65 EWT(1)/EWG(v)/FCC/EWA(d)/EEC-4/EEC(t)/EWA(h) Po-4/Pe-5/Pq-4/Pae-2/
Peb/Pi-4 GW/WS-4

ACCESSION NR: AP5002266 S/0026/64/000/012/0077/0078

AUTHOR: Kolesov, G. M.; Rutkovskiy, V. M.

61
59
B

TITLE: The Zaysan carbonaceous chondrite

SOURCE: Priroda, no. 12, 1964, 77-78

TOPIC TAGS: meteorite, solar activity, cosmic ray intensity, manganese, scandium, cerium, europium, barium, uranium, neutron activation

ABSTRACT: On December 11, 1963 a meteorite fell into frozen Lake Zaysan in the Kazakh SSK and a piece weighing 463 g was found. The Zaysan meteorite is of special interest because it fell during a period of minimum solar activity. The meteorite has a polyhedral shape, a secondary type surface, and a fused crust on all sides, and contains ferronickel. Certain rare elements (scandium, cerium, europium, barium, and uranium) were found by a neutron activation method in which meteorite samples (20-250 mg) were irradiated for 20 hrs. The contents of these elements were measured by the activity of their corresponding isotopes. Cosmogenic radioactive isotopes

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(Cl^{36}, V^{49}, Cr^{51}, and Mn^{54}) were separated from 70 g of meteorite by a special method and measured by a low-background gas flow counter. Tentative data show that the Mn^{54} activity ($T_{\frac{1}{2}}$ 300 days) of the Zaysan meteorite is extremely high compared to the Mn^{54} activity of stony meteorites which fell during maximum solar activity (1958-1960). High Mn^{54} activity was also found in the Bogu iron meteorite (8/14/62 in Africa). On the basis of these data A. K. Lavrukhina suggests that low energy cosmic rays in the region of certain meteorite orbits (astronomic units 1-4) have a significantly higher intensity in years of minimum solar activity than in years of maximum solar activity when the solar wind "sweeps out" the low energy cosmic rays from the

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NR REF SOV: 000 OTHER: 000

KOLESOV, G.M.; RUTKOVSKIY, V.M.

Carbonaceous chondrite of Zaysan. Priroda 53 no. 12:77-78 '64. (MIRA 18:1)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo AN SSSR, Moskva.

MITREV, Yu.G.; KUTKOVSKIY, V.V.

Complications developing in treating diseases of the blood system with corticosteroid hormones. Probl. gemat. i perel. krovi 10 no.1:20-24 Ja '65. (MIRA 19:1)

1. Glavnyy voyennyy gospital' imeni Burdenko (nachal'nik - general-mayor meditsinskoy sluzhby M.M. Gilenko, glavnyy terapevt - general-mayor meditsinskoy sluzhby M.I. Teodori), Moskva.

L 41242-66 EWT(d)/EWT(m)/EWP(f)/T-2

ACC NR: AP6030509 SOURCE CODE: CZ/0032/66/016/003/0209/0215

AUTHOR: Honcu, J. (Engineer); Rutkovsky, B. (Engineer)

ORG: [Honcu] LIAZ, Mnichovo Hradiste; [Rutkovsky] Technical Institute of Machinery and Textiles, Liberec (Vysoka skola strojni a textilni)

TITLE: Flexural strength and rigidity of combustion engine blocks

SOURCE: Strojirenstvi, v. 16, no. 3, 1966, 209-215

TOPIC TAGS: internal combustion engine component, vehicle engine

ABSTRACT: The article presents the results of theoretical and experimental research into the flexural strength and rigidity of the engine blocks of six-cylinder compression ignition power units for commercial vehicles. The method is suitable for comparing several variants and evaluating their relative strength but less suitable for tests which are to give accurate figures. Valuable information is given on the effect of cross bolts, oil pan, cylinder heads, etc, on the deformation of the block. This paper was presented by Engineer K. Oktavec. Orig. art. has: 5 figures and 8 tables. [Based on authors' Eng. abst.] [JPRS: 36,645]

SUB CODE: 10 / SUBM DATE: none / ORIG REF: 003

Card 1/1 mlp UDC: 621.436:629.114.4: 621.43-214

theory of point transformations. Section 1 of Ch. I, Ch. IV, and sections 4-6 of Ch. VII were written by N.S. Gorskaya; Ch. III and VI, and sections 2-5 of Ch. I by I.N. Krutova; and Ch. II and V, and sections 1-3 of Ch. VII by V.Yu. Rutovskiy. The authors thank N. A. Furayev and V.V. Petrov. There are 130 references: 100 Soviet, 24 English, 3 German, and 3 French.

TABLE OF CONTENTS:

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RUTKOVSKIY, V. Yu.

PHASE I BOOK EXPLOITATION SOV/3754

Gorskaya, Nina Sergeyevna, Inessa Nikolayevna Krutova, and Vladislav Yul'yevich Rutkovskiy

Dinamika nelineynykh servomekhanizmov (Dynamics of Nonlinear Servomechanisms) Moscow, AN SSSR, 1959. 318 p. Errata slip inserted. 3,300 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki.

Ed.: B.N. Petrov, Corresponding Member, Academy of Sciences USSR
Ed. of Publishing House: Ye. N. Grigor'yev; Tech. Ed.: P.S. Kashina.

PURPOSE: This monograph is intended for scientific workers and engineers studying or designing automatic control systems and their components. Ch. II is of special interest to persons studying the phase plane method and the method of point transformations.

COVERAGE: The monograph examines certain specific types of electropneumatic, hydraulic, and electric servomechanisms in order to investigate the dynamics of nonlinear servomechanisms on the basis of the method of phase space and of the

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RUTKOVSKIY, V.Yu.

PETROV, V.V. (Moskva); RUTKOVSKIY, V.Yu. (Moskva)

The theory of simple servomechanisms having two delayed relays.
Izv.AN SSSR.Otd.tekh.nauk no.2:59-71 F '57. (MLRA 10:5)
(Servomechanisms) (Electric relays)

AUTHOR: Rutkovskiy, V. Yu. (Moscow) 103-19-5-5/14

TITLE: An Analysis of the Free Oscillations Around the Center of Gravity of a Neutral Plane Without Self-Damping and with a Relay Autopilot (Analiz svobodnykh kolebaniy vokrug tsentra tyazhesti neytral'nogo samoleta bez sobstvennogo dempfirovaniya s releynym avtopilotom)

PERIODICAL: Avtomatika i Telemekhanika, 1958, Vol. 19, Nr 5, pp. 435-447 (USSR)

ABSTRACT: The simplest all-relay system whose linear part is expressed by an ordinary degenerate equation of third order is here investigated by means of the method of point transformations. The employment of the point transformation method yielded the possibility to find the equations of the surfaces determining the domain of attraction (according to the initial conditions) of the state of equilibrium and the stable limit cycle in a general form. This yields the possibility to select the control parameters in a manner that the

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system remains able to work under the given limitations. The solution of the problem is done on the basis of references 2 and 3. These works were the first in which the spatial problem was exactly solved and in which the stability domains in the system parameters were constructed for it. The theory of the point transformations of surfaces is also set forth in these works. On the basis of the investigations the following is found: 1) A neutral airplane with a negligibly low self-damping, controlled by an autopilot with a constant speed of the servomotor control, is as a dynamic system, when $l = 0$, stable on a small scale and unstable on a large scale. 2) The space of the initial conditions under which the system tends toward the equilibrium position ($\Delta = 0$) or the self-oscillations ($\Delta \neq 0$) increases with an increase in the inertia of the object, the factor of rigid feedback, the factor of the influence according to the derivative of the controlled coordinate and with a decrease in the small cross bar time of the servomotor. 3) The skipped distance

An Analysis of the Free Oscillations Around the Center of Gravity of a Neutral Plane Without Self-Damping and With a Relay Autopilot

103-19-5-5/14

and the loop in the servomotor characteristic narrow the space of the initial conditions under which the system tends toward the equilibrium position or towards the self-oscillations. The work was performed under the direction of B. N. Petrov. There are 10 figures and 12 references, 11 of which are Soviet.

SUBMITTED: June 11, 1957

AVAILABLE: Library of Congress

1. Airplanes--Oscillation--Mathematical analysis 2. Servomotors--Applications 3. Airplanes--Servo systems

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S/124/60/000/006/005/039
A005/A001

Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 6, p. 15, # 6912

AUTHORS: Petrov, V.V., Rutkovskiy, V.Yu.

TITLE: Some Problems of Designing and Choosing the Characteristics of Rapidly Responding Servomechanisms

PERIODICAL: Avtomat. upr. i vychisl. tekhn. No. 2, Moscow, Mashgiz, 1959, pp. 249 - 270

TEXT: The authors show that the minimum duration of a transient process may be attained in some servomechanisms not by maintaining the extremum values of the derivatives of the coordinates being controlled, but under other conditions. In particular, if the power of the energy source and the magnitude of the energy carrier potential are limited, the most rapid transient process will take place when the auxiliary energy is supplied through a governing relay element. It is noted that the transient process of a servomechanism, being in a self-oscillation steady state, proceeds in shorter time than the process with-

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A005/A001

Some Problems of Designing and Choosing the Characteristics of Rapidly Responding Servomechanisms

out oscillations. The authors consider only a system, the motion of which is described by an equation of second order, but some results are generalized without proof to objects of more general form.

Yu.S. Scholev

Translator's note: This is the full translation of the original Russian abstract.

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RUTKOVSKIY, V.Yu. (Moskva); SSORIN-CHAYKOV, V.N. (Moskva)

Use of a harmonic linearization technique in studying systems containing executive mechanisms with two limitations. Izv. AN SSSR. Tekh. kib. no.6:33-45 N-D '63. (MIRA 17:4)

KULEBAKIN, V.S., akademik, otv. red.; PETROV, B.N., akademik, otv. red.; BODNER, V.A., doktor tekhn. nauk, red.; VORONOV, A.A., doktor tekhn. nauk, red.; IVAKHNENKO, A.G., red.; ISHLINSKIY, A.Yu., akademik, red.; KOSTYUK, O.M., kand. tekhn. nauk, red.; KRASSOV, I.M., kand. tekhn. nauk, red.; KUNTSEVICH, V.M., kand. tekhn. nauk, red.; KUKHTENKO,A.I., red.; RYABOV, B.A., doktor tekhn. nauk, red.; SIMONOV, N.I., doktor fiz.-mat. nauk, red.; ULANOV, G.M., doktor tekhn. nauk, red.; FEDOROV, S.M., kand. tekhn. nauk, red.; TSYPKIN, Ya.Z., doktor tekhn. nauk, red.; CHINAYEV, P.I., kand. tekhn. nauk, red.; KRUTOVA, I.N., kand. tekhn. nauk, red.; RUTKOVSKIY, V.Yu., kand. tekhn. nauk, red.

[Invariancy theory in automatic control systems; transactions] Teoriia invariantnosti v sistemakh avtomaticheskogo upravleniia; trudy. Moskva, Nauka, 1964. 503 p. (MIRA 18:2)

1. Vsesoyuznoye soveshchaniye po teorii invariantnosti i yeye primeneniyu v avtomaticheskikh ustroystvakh. 2d, Kiev, 1962. 2. Chlen-korrespondent AN Ukr.SSR (for Ivakhnenko, Kukhtenko).

ACCESSION NR: AP4015300 S/0280/64/000/001/0124/0131

AUTHOR: Krutova, I. N. (Moscow); Rutkovskiy, V. Yu. (Moscow)

TITLE: Model-adaptive system — Part I

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 1, 1964, 124-131

TOPIC TAGS: automatic control, adaptive automatic control, model adaptive automatic control, model reference adaptive control, model adaptive control theory

ABSTRACT: The well-known principle of operation and some characteristics of a model-reference adaptive control system are theoretically investigated. [The system given in Fig 5, p. 125, of the Russian original is "not considered adaptive" according to John E. Gibson, "Nonlinear Automatic Control," 1962, p. 498. Abstracter]. An ideal model is considered. The use of an aperiodic unit as a reference model is indicated for complicated and higher-order control systems.

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